THE ECO-SPHERE

TECH & ENERGY | FRONTIER | SUSTAINABILITY | EVENTS & OTHERS

SUSTAINABILITY

Sustainable living, smart design and turning waste into resources.
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THEME

"Everything is connected to everything else. There is one ecosphere for all living organisms and what affects one, affects all."

Barry Commoner – The Closing Circle (1971)

www.obutonde.com

> We extend our heart-felt thanks to all the contributors, creators, and visionaries who brought this project to life.
> To our sponsors and partners—your support made every page possible.
> Together, we're planting seeds for a more sustainable future.

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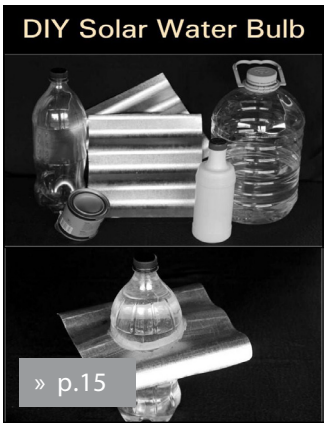

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“Each article, image, and idea shared here adds to a growing movement of awareness and action. Thank you for lending your voice to a cause that matters—to the planet, and to all of us.

EDITOR'S NOTE

EDITORIAL

PATRICK ONGOM

We are living in a time of reckoning with the natural world—a moment where every decision, every innovation, and every act of care matters. The environment is not a distant backdrop to human life; it is the system that sustains it. In this issue, we widen our lens to consider the eco-sphere as a whole: land, water, air, and all the life they hold, from the microscopic to the majestic.

Our pages explore the layered stories of waste transformed into worth—glass and polythene repurposed, broken ceramics reborn—but we go further. We look at ecosystems under pressure, communities rising to protect what remains, and radical reimaginings of how we live, build, and consume. Art, science, policy, and activism meet here with one shared aim: regeneration.

This is not just a magazine—it's a call. To see with new eyes. To create with responsibility. To remember that sustainability is not a trend, but a return to balance. The Earth is speaking. Our task is to listen—and respond.

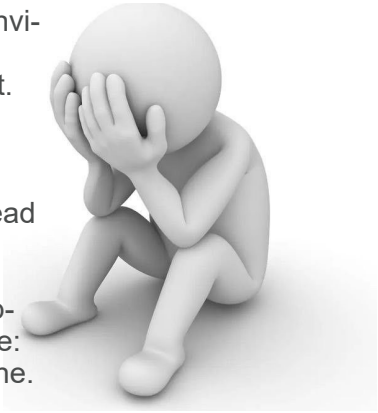
Editor- *PATRICK ONGOM*

The Earth, the Body, and the Mind: A Broken Balance We Must Mend

ARTICLE

In the ancient world, the balance between the human body and nature was sacred. Hippocrates—the father of modern medicine—wrote that health depended on “air, water, and place.” Centuries later, science has circled back to that wisdom with stark clarity: when ecosystems collapse, so does human health—both physical and mental.

We now live in a time where environmental degradation is no longer an abstract future threat. It’s here. It’s personal. Rising temperatures bring not just drought and disaster, but also heat-related illnesses, the spread of vector-borne diseases, and increased food insecurity. But beyond the statistics and symptoms lies something less visible: the weight on the human psyche.



“In every walk with nature one receives far more than he seeks.”

— John Muir, naturalist and early environmentalist

Climate Change Is a Mental Health Crisis

According to the American Psychological Association, climate-related stress can lead to anxiety, depression, PTSD, and substance abuse. And for frontline communities—those facing floods, fires, and famine—these effects are immediate and often severe.

But even those far from physical harm are not immune. The World Health Organization now recognizes "eco-anxiety" and "solastalgia"—the emotional distress caused by witnessing environmental loss. Children are growing up with a future shadowed by climate chaos. For many, it's not just an environmental issue—it's an existential one.

Urban Life and the Disconnection from Nature

More than half the global population now lives in cities, often with limited access to green spaces. Urban environments, while offering opportunity, also expose residents to air pollution, noise, overcrowding, and disconnection from natural rhythms. Studies from The Lancet and Nature Mental Health show that individuals in cities are significantly more prone to anxiety disorders and mood disturbances.

Yet the solution may be hiding in plain sight.

Exposure to nature—even for just 20 minutes—has been shown to lower cortisol levels, reduce rumination, and increase feelings of vitality. Practices like forest bathing (Shinrin-yoku in Japan) are not just poetic rituals—they're evidence-based interventions now used in preventative health.

Nature as Medicine, Not Metaphor

We don't just rely on ecosystems for survival—we rely on them for peace of mind. Clean air reduces inflammation in the brain. Soil contains microbial antidepressants (Mycobacterium vaccae). Access to green space correlates with lower crime, better academic outcomes, and higher reported happiness.

Yet deforestation, industrial pollution, and climate disruption are tearing these invisible supports away. As we lose biodiversity, we also lose biological and psychological resilience.

The deeper message is clear: our internal landscapes mirror our external ones. When the world around us is degraded, disordered, and exhausted—so are we.

AIR POLLUTION AND Brain Health

Fact: A 2023 study in BMJ Mental Health found that long-term exposure to air pollution significantly increases the risk of depression and anxiety.
Why it matters: Cities with poor air quality—like Delhi, Lagos, or Los Angeles—aren't just putting lungs at risk, but also mental stability. Children and elderly people are especially vulnerable.

GREEN SPACES REDUCE Urban Stress

- Fact: A UK study by University of Exeter found that people living near parks or green spaces report lower levels of stress, anxiety, and depression, regardless of income.
Why it matters: Urban planning that prioritizes parks and trees is not just beautification—it's a mental health intervention that benefits millions.

CLIMATE DISASTERS ARE Causing PTSD

Fact: After Hurricane Katrina, more than 49% of survivors showed signs of PTSD or serious psychological distress (CDC).
Why it matters: As climate disasters become more frequent, so do trauma-related mental health issues. Displaced families and children face long-term emotional impacts.

SOIL BACTERIA CAN Act Like Antidepressants

Fact: Mycobacterium vaccae, a bacteria found in healthy soil, has been shown to trigger serotonin production—similar to Prozac.
Why it matters: Gardening, farming, or simply touching soil can have a direct calming effect on the nervous system. It's nature's own mental health boost.

SUSTAINABILITY SHAPING A SMARTER, GREENER FUTURE

SUSTAINABILITY

As the world grapples with climate change, pollution, and rapid development, sustainability is no longer optional — it's essential. This feature explores how economic growth, innovation, and environmental care can coexist, with a special focus on Africa's unique opportunity to lead the way toward a sustainable future.

> *"Sustainabilty is about learning from the past to build a future where nature, people,and progress thrive together."*

What is **SUSTAINABILITY**?

Sustainability is the interactions between humans, biodiversity, and the economy. There are seventeen goals set out by the United Nations as a baseline for each government, to establish a healthy production, where humans, manufacturing and nature can live in equilibrium.

Populations begin to grow during the industrial revolution in 1760 to the amount of a billion people and from thereon population growth took a sharp increase and at the end of 2022 there were eight billion people on earth. Economic activity has expanded, producing wealth and growth among nations.

However, this has also threatened the earth by altering the climate system, ocean chemistry, air quality, water cycles, and soil chemistry. The nitrogen cycle, which is a biogeochemical process that convert nitrogen into different chemical forms, passing from the atmosphere to the soil to organisms like plants and back to the atmosphere.

Industrial activities such as mining, coal burning, oil and gas drilling, and construction have led to elevated levels of carbon dioxide, carbon monoxide, sulphur dioxide, nitrogen dioxide, methane, and volatile organic compounds in our atmosphere.

CO2 has caused ocean acidification, melting of glaciers, extreme weather events, ozone depletion, polluted fresh water, soil, air pollution, disruption of earth's normal nitrogen and phosphorous cycle.

The core goal of Sustainability is to understand the risks, honour and respect our planetary boundaries by establishing standard operating procedures and policies that combat pollution from all industries, to bring forth economic prosperity, environmental sustainability, and healthy livelihoods.

There are solutions to the way of living and especially a continent like Africa that are in its developing stage, can approach building, developing, mining, electrifying and establishing healthcare for its people with innovative designs and making use of our natural resources to enable us a path to a sustainable future.

We can learn from the mistakes of developed countries and make sure if there is mining operations, we must plant trees that absorb pollutants and prevent dust from being transferred to communities, make use of solar energy, use biochemicals in farming and use agricultural waste for soil enrichment, turn waste into recycled products, plastic can be recycled and or try to avoid using plastic and make use of banana leaves to manufacture bags, use seaweed (produce bags, food produce, fertilizer), use food waste (compost, soup, jam), recycle textiles (produce bags, blankets, hoodies, scarfs, carpets, wind shields), and build with natural resources.

Sustainable living is to be able to produce something from a natural resource and keep it in a circulatory system like reuse, recycle, repair, and use again for other purposes.

It involves starting businesses that extend the lifespan of a product to create a resilient economy that benefits the environment and society. Climate Change has caused developed countries to find ways for capturing carbon and to store it or reuse it and those processes are more

expensive than the alternative: doing nothing. To change the behaviour of carbon-intensive industries and individuals to limit the excess of CO2 into the atmosphere, to a well below 2°C outcome of global warming, our governments need to put in place appropriate policies and regulations and make CCS a global trading partner amongst big polluters.

Yvette Retief
Bioresus Global Npc. Unversity of CapeTown.

PROSPECTIVE PROJECTS

OBUTONDE

Did You Know?

Melting raw sand to make new glass requires temperatures up to 1700°C (3090°F), consuming so much energy that it's roughly 25–30% of the total energy cost of producing new glass. But when you use recycled glass powder instead of raw materials, you can cut energy use by up to 30–40%, depending on the process. Some modern ceramic and glass products made from crushed powder save even more—up to 50% in energy, while also reducing raw material demand and CO2 emissions.

Crushed, Not Wasted:

A New Life for Glass and Ceramic Waste

Every year, the world produces millions of tons of glass and ceramic waste—bottles, tiles, plates, electronics, porcelain sinks, and shattered windows—materials designed to last forever, yet discarded after a single use or broken moment. Unlike plastic, which dominates environmental campaigns, glass and ceramics are often overlooked in sustainability conversations. Their silent accumulation in landfills and illegal dumps poses a long-term threat that's rarely addressed.

Glass is non-biodegradable it does not decompose for thousands, even millions of years. Ceramic, a close cousin formed from fired clay and silicates, is just as stubborn. These materials leach no toxins, which makes them seem harmless. But their presence in landfills contributes to bulk waste problems, landfill overcapacity, and lost resource opportunities. Worse, unlike paper or plastic, ceramics are almost never recycled. They don't fit into standard waste streams.

And yet, both glass and ceramic hold immense potential when viewed through the lens of circular design and material innovation.

The Project Vision:

Transforming Waste into Raw Material

This project proposes an integrated solution to address post-consumer and post-industrial glass and ceramic waste by recovering it from landfills, illegal dump sites, and the urban environment—and converting it into fine powder. This powder is then tested and repurposed as a bio-raw material for various applications, from functional art and building materials to industrial composites.

Instead of allowing valuable silicate-based materials to remain broken and buried, we see an opportunity to furnace the fragments into a substance with new life redefining waste as a resource.

How It Works: From Debris to Design

The project follows a practical and scalable approach:

Collection
Waste is collected through community drives, partnerships with demolition sites, landfills, and local waste management services. Special focus is given to abandoned tiles, broken ceramics, labware, bottles, and other high-silicate items.

Sorting & Crushing
Materials are cleaned, sorted, and mechanically crushed using grinders and hammer mills into controlled particle sizes—ranging from coarse aggregate to fine powder.

Powder Refinement
Fine powder is sieved and tested for consistency. Depending on its composition (glass, ceramic, or hybrid), it is prepared for specific reuse paths—artisanal or industrial.

Applications

Eco-art & Sculpture: Artists use the powder in resin molds, mixed media, and surface treatments.

Sustainable Tiles & Bricks: The powder is blended with binders to create decorative tiles and construction materials.

Bio-based Composites: Used as a filler or binder in low-temperature composite manufacturing, or fused in new ceramic-glass hybrid materials.

Academic Prototypes: Collaborations with schools and universities test it in concrete additives, geopolymers, or 3D printing substrates.

What Makes This Different

While glass recycling exists in formal systems, ceramics and mixed waste streams are almost never reused. This project unites both material categories into a single process pipeline, creating opportunities for cross-material innovation. It embraces material circularity, reducing extraction of virgin resources and offering a tangible example of regenerative design.

A Waste Stream Worth Rethinking

In our age of climate urgency, sustainability must go beyond recycling slogans. We need systems that are designed for disassembly, recovery, and regeneration. This project offers one such system—quietly powerful, materially intelligent, and scalable.

Because even broken things, when crushed with care, can be transformed into foundations for something

Outcomes & Impact

The project delivers:

A **scalable model** for glass and ceramic powder repurposing.

A **library of tested use cases** for the material—spanning art, architecture, and eco-industry.

Public installations or **product showcases** to engage the community.

A working methodology toolkit for **replication in other regions.**

Potential collaboration with city governments or waste management authorities for **long-term integration.**

TECHNOLOGY AND SUSTAINABILITY

THE FRONTIER

KELVIN DANTE

This article is the beginning of a larger conversation. In the following parts, we'll look at the real tools reshaping industries, and the new generation of thinkers and doers designing a future where technology and sustainability aren't at odd but in partnership.

JULIUS NYIIRO

Real-world technological interventions from smart agriculture to circular economies that are already reshaping how we live and consume.

UNEP

TABUUZA EUNICE EVELYNE

Agency, equity, and the opportunity for developing regions — especially youth — to lead a new, sustainable kind of progress.

There's a quiet tension at the heart of our times. We celebrate our progress our ability to connect continents with a click, to harness the sun's energy, to grow food in deserts. Yet, beneath that pride lies a deeper truth: we have reached the edge of what the planet can carry.

The signs are all around us. Summers grow hotter. Storms grow stronger. Rivers that once nourished entire regions now run dry. The systems that sustained life for generations are being pushed out of balance by us.

This isn't a guilt trip. It's a reckoning.

For too long, growth was measured only by how much we could extract, build, or consume. Economic strength was prized over ecological health. Nature became something we used, not something we belonged to.

But that narrative is shifting. Sustainability is no longer a buzzword reserved for environmentalists or boardroom strategies it's become a necessary blueprint for survival. It challenges us to rethink how we live, build, travel, and produce. And central to that shift is a question we can't ignore:

Can technology help us restore what we've broken?

In many places, it already is. Across Africa and other parts of the Global South, we're seeing technology used not just to modernize, but to harmonize with people and with the planet.

Take energy. Off-grid solar power is lighting up homes that were never connected to a national grid. In Kenya, mini solar grids now power schools, clinics, and small businesse quietly, cleanly, and cheaply. In Rwanda, electric motorcycles are reducing city pollution while creating green jobs.

In agriculture, innovation is helping farmers use less to grow more. Smart irrigation systems reduce water waste. Drones monitor crops for pests and diseases. And mobile apps, accessible via basic phones, guide farmers on when to plant, how to rotate crops, and how to protect the soil.

These aren't luxury innovations. They are lifeliness and they are proving that technology, when grounded in local knowledge and environmental responsibility, can be a force for healing.

But we must be honest. Technology alone won't save us. Tools need direction. Progress needs purpose. And solutions need justice.

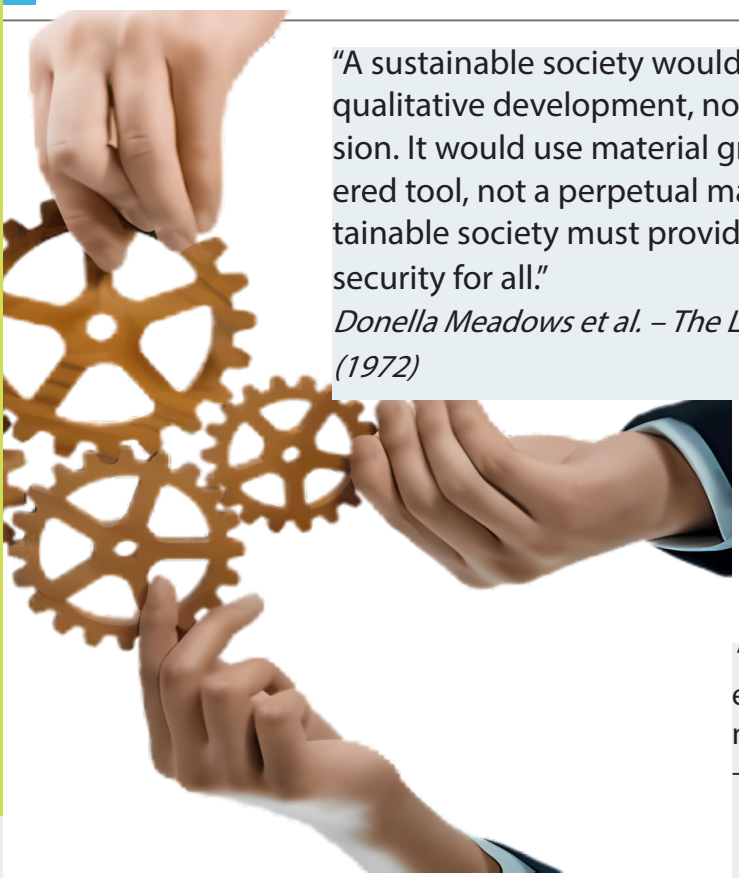
If new technologies widen inequality or deepen the digital divide, then we've only replaced one problem with another. But if we use innovation as a bridge to clean energy, to food security, to climate resilience then we start to build something truly sustainable.

Africa, in many ways, stands at a pivotal moment. We are still developing, still expanding, still building. But that's precisely the opportunity. We can build differently. We don't need to mimic the carbon-heavy, consumption-driven models of the past. We can design infrastructure that serves people and preserves ecosystems. We can make cities greener, transport cleaner, and homes more energy efficient from the start.

We don't inherit the old mistakes we learn from them.

By *KELVIN DANTE*

"SUSTAINABILITY IS NOT ABOUT SACRIFICING DEVELOPMENT; IT'S ABOUT REDEFINING IT. IT'S ABOUT ENSURING THAT WHAT WE BUILD TODAY DOESN'T BECOME A BURDEN TOMORROW"



"A sustainable society would be interested in qualitative development, not physical expansion. It would use material growth as a considered tool, not a perpetual mandate... A sustainable society must provide sufficiency and security for all."
Donella Meadows et al. – The Limits to Growth (1972)

"The future will either be green or not at all."
— *Bob Brown*

"The environment and the economy are really both two sides of the same coin. If we cannot sustain the environment, we cannot sustain ourselves."
— *Wangari Maathai*

"There is no such thing as 'away.' When we throw anything away, it must go somewhere."
— *Annie Leonard*

"The environment does not exist as a sphere separate from human actions... But the 'environment' is where we all live; and 'development' is what we all do in attempting to improve our lot within that abode. The two are inseparable."
Brundtland Commission – Our Common Future (1987)

"We are using resources as if we had two planets, not one. There can be no 'plan B' because there is no 'planet B.'"
— Ban Ki-moon

THE TOOLS THAT COULD SAVE US.

TECH

The greatest tools of this generation aren't made for convenience they're being built for survival. As the climate continues to shift and our population climbs, the world is being forced to reengineer how it produces, consumes, and sustains life.

Technology is rising to meet that challenge.

Across Africa, Asia, and South America, farmers are using AI-powered apps to detect pests early and schedule irrigation only when needed—cutting down on water use and pesticide waste. Drones hover over fields, collecting data that would once take months to gather. In urban hubs, smart buildings adjust light and air conditioning automatically, cutting energy bills and emissions.

Perhaps one of the most powerful shifts is in energy. In 2023, over 80% of new electricity worldwide came from renewable sources. Solar panels, once expensive and out of reach, are now powering entire rural communities. Battery storage is improving, allowing excess power to be saved and used when the sun isn't shining.

Even our waste is being reimagined. Plastic waste is being transformed into bricks. Banana leaves and seaweed are being turned into packaging. Food waste is being composted at scale. Technology is bringing us closer to the idea of a circular economy—where nothing is wasted, and everything has a second life.

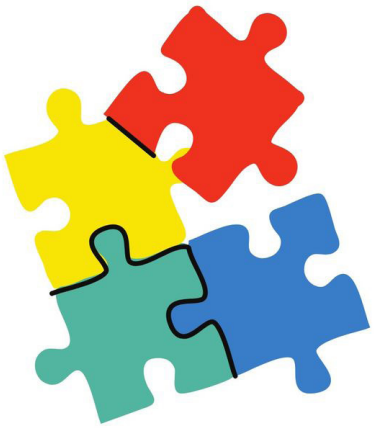
But for all its promise, technology must be scaled equitably. The digital divide remains a major barrier. Billions still lack internet access or affordable energy. For technology to save us, it must serve us all—not just the privileged few.

What's clear is this: the tools exist. What's needed now is the will to use them wisely, and the policies to ensure they benefit both people and planet.

By Julius Nyiiro.

The Solar Water Bulb is a low-cost, eco-friendly lighting solution designed for areas without access to electricity. This innovative idea uses a clear plastic bottle filled with water and a small amount of bleach, which is then installed through the roof of a structure. When sunlight hits the bottle, the water refracts the light, producing illumination equivalent to a 40–60 watt bulb inside the room. The Solar Water Bulb was originally designed in the Philippines by Illac Diaz, founder of the MyShelter Foundation. The project, known as "Liter of Light", began in 2011 and was inspired by an earlier concept developed by Alfredo Moser, a Brazilian mechanic, in 2002.

BUILDING THE DESERVED FUTURE



What if we could build it differently?

That question sits at the heart of a quiet but powerful movement, especially among young people in Africa. For many African nations, the urgency of development is real access to clean water, energy, housing, and healthcare is non-negotiable. But there is a growing refusal to follow the same paths that led wealthier nations into climate crisis.

Instead, a new generation is building smarter, cleaner, and fairer systems from the ground up.

We see it in Ghana, where young engineers are turning e-waste into new products. In Rwanda, where electric motorcycles are reducing city smog. In South Africa, where youth-run startups are developing biodegradable materials from indigenous plants. These solutions aren't just innovative—they're rooted in local knowledge, practical needs, and a clear vision for sustainability.

This is the advantage of building late. While developed countries struggle to retrofit aging infrastructure, emerging economies can leapfrog directly into the green future. Mobile banking, solar mini-grids, smart irrigation, and digital healthcare aren't "the future" anymore they're becoming standard in many African and Asian regions.

But to scale this progress, governments must play their role. Policy must support clean tech, not polluting legacy systems. Education must prepare young people for green industries. Investment must move away from fossil fuels and into sustainable infrastructure.

The future we deserve is one where prosperity doesn't mean pollution. One where every child grows up with clean air, safe water, and a stable climate. That future won't arrive on its own we must build it, with care, creativity, and courage.

by Evelyne Tabuuza Eunice

Vincent Oduor, co-founder of Aquaculture Barn Limited in Kisumu, Kenya, was named the country's most innovative fish farmer in the 2023 Lattice Aquaculture Awards. Starting as a university volunteer, Oduor gained expertise in recirculating aquaculture systems and founded the Victoria Aquaculture Youth Group, helping establish seven fish farms. His company now produces over 40,000 tilapia and catfish fingerlings monthly using advanced, sustainable methods. Despite challenges like high feed costs and power outages, he remains committed to improving aquaculture. His award included premium fish feed and advanced training—further empowering him to shape the future of fish farming in Kenya.

Waste-based Insect Farming for Resource Efficiency and Climate Protection

© EAWAG

© Bioconvision

Swiss Partners

Bioconvision
www.bioconvision.com

Sheila von Hoerner

Local Partner

Jinja City Council

Project Type:	Pilot project
Technology:	Resource efficiency
Country:	Uganda
Project Status:	Ongoing
Project Start:	2024
End of Project:	2025
Contract:	2023.07

Documentation

Video

Swiss Contribution

The Swiss project partners Bioconvision and EAWAG have many years of experience with the breeding of Black Soldier Fly larvae as animal feed. In recent years, EAWAG has published online courses and a handbook on the subject.

Description

The project partners will develop and validate an insect farm in Jinja, Uganda, that will process large quantities of organic waste.

The insect farm will produce larvae of the Black Soldier Fly (BSF) in a low-carbon biosystem. The larvae feed on organic waste, which reduces the overall amount of waste. At the end of the process, the larvae are processed into animal feeds.

This alternative source of protein will create employment and development opportunities particularly for women and the younger population. The project reduces dependency on imported fish and soy. Keeping food waste out of landfills will contribute to the reduction in methane and avert spreading of diseases.

Results

The optimisation of the reproduction site has been successfully completed. By the end of the summer of 2024, around 1000 kg of waste was being processed per day. Since the start of the project, 8.4 tonnes of insect larvae and 7.2 tonnes of organic fertilizer have been sold.

Based on the gained experience, the next step will be to realise a larger production facility capable of processing about 10 tonnes of organic waste per day.

Think of the ecosphere as the thin, fragile layer around Earth where all life exists. It's where the air we breathe, the water we drink, and the food we eat come from. Everything in nature is connected. But the way the modern world works—our industries, our cities, even our daily habits—often ignores this simple truth.

Instead of living with nature, we've built a world that works against it. Factories release pollution, landfills grow bigger, forests shrink, and oceans warm. Why? Because our systems are designed to serve people's wants—fast, cheap, and now—not the planet's needs.

THE COST OF TECHNOLOGY

TECH

ENERGY-HUNGRY ROOTS: THE ENVIRONMENTAL COST OF POWERING TECH

Every digital click comes with a *hidden environmental price tag*. Data centers, which house the servers powering the internet, currently consume about 3% of global electricity. This could rise to 10% by 2030 if no shift to clean energy is made. Most of this energy still comes from fossil fuels, emitting millions of tons of carbon annually.

Many of these centers rely heavily on water-intensive cooling systems, adding to environmental strain. Tech giants like Google and Microsoft have started transitioning to wind and solar energy, but the transition is uneven especially in low-income countries where green infrastructure is limited or nonexistent.

MINING FOR MICROCHIPS: THE DIRTY SECRET OF CLEAN TECH

Our devices depend on critical minerals like lithium, cobalt, and coltan many of which are mined under environmentally destructive and ethically questionable conditions. Forest destruction, chemical leaching, and water depletion are widespread in mining regions.

For instance, cobalt mining in the Democratic Republic of Congo has led to contaminated water supplies and devastated ecosystems. Meanwhile, lithium extraction in Chile's Atacama Desert has dried up water sources critical for local agriculture.

As demand for these materials grows with the push for electric vehicles and renewable tech, the pressure on ecosystems and communities increases dramatically.

THE RISING TIDE OF TECHNOLOGICAL WASTE

Innovation moves fast often too fast. Millions of tons of electronic devices are discarded each year. In 2022 alone, 62 million tonnes of e-waste were generated globally, but only 22% was properly recycled.

In developing countries, informal recycling methods involve burning or acid-leaching to extract metals, exposing workers and communities to harmful toxins such as lead, cadmium, and mercury. These pollutants contaminate soil and water, impacting both public health and the environment.

WHEN TECHNOLOGY BECOMES AN ECO ALLY

Despite its drawbacks, technology can also support sustainability. Solar panels, wind turbines, and hydro systems are revolutionizing clean energy access. In agriculture, precision farming technologies minimize pesticide use and maximize water efficiency.

Recycling innovations are also on the rise. AI-driven sorting machines, modular electronic designs, and blockchain-based tracking systems are improving material recovery and reducing waste.

In urban areas, smart grids and building automation reduce energy consumption and carbon emissions—showing that tech, when responsibly used, can be part of the solution.

WHO GETS TO GO GREEN?

TECHNOLOGY AND INEQUALITY

Access to green technology is far from equal. High-income countries enjoy advanced waste processing systems and subsidized clean energy, while low-income regions are left behind. Outdated infrastructure, limited funding, and political hurdles often stall progress.

This inequality deepens the environmental divide: the poorest suffer the worst pollution, while the richest reap the benefits of sustainability. Bridging this gap requires inclusive policy, international support, and fair distribution of green innovation.

TOWARD RESPONSIBLE TECH: WHAT NEEDS TO CHANGE?

A sustainable tech future demands collaboration across sectors:

Governments must enforce strict environmental regulations, encourage ethical mining, and incentivize sustainable product designs.

Tech Companies should invest in circular design principles—devices that can be repaired, reused, and recycled.

Consumers can push the market by demanding eco-friendly products and embracing repair culture.

Promising examples exist. Brands like Fairphone offer modular phones with easily replaceable parts. Tech leaders have pledged carbon neutrality, and recycling programs are expanding worldwide. Still, scaling these initiatives globally remains a challenge.

CONCLUSION

Technology is a powerful tool, neither inherently good nor bad. Its environmental impact is a reflection of how we choose to harness it. The current trajectory is unsustainable, but not irreversible.

With bold innovation, responsible leadership, and informed consumers, technology can become a driver of environmental restoration—not degradation. As we move forward, the goal must be clear: align technological progress with planetary health.

Did You Know?

A single data center can consume as much energy as 50,000 homes.

Only 1 in 5 electronic devices are properly recycled worldwide.

INSPIRATION FROM THE FIELD

Chile's solar farms now power over 30% of the country's daytime electricity needs.

In the Netherlands, a circular economy model has made smartphone repair shops a booming business.

MAKING RENEWABLE ENERGY ACCESSIBLE TO LOW -INCOME COMMUNITIES

ENERGY FOR ALL

INTRODUCTION

Renewable energy is one of the most important solutions to climate change and energy poverty. But while many people around the world are switching to clean energy, millions in low-income communities are still left behind. These communities often rely on unsafe, expensive, or polluting sources like charcoal, firewood, and kerosene.

This article explores how renewable energy can be made more accessible to low-income people, the benefits it brings, the challenges they face, and how those challenges can be overcome.

THE ENERGY GAP

Globally, over 700 million people still do not have access to electricity. Many more experience regular blackouts or can only afford harmful energy sources. This lack of reliable energy affects every part of life—health, education, business, and safety.

In low-income areas, energy poverty is common because of poor infrastructure, high costs, and a lack of supportive policies. Renewable energy can help close this gap, but only if systems are built with inclusion in mind.

WHY RENEWABLE ENERGY MATTERS

For low-income households, access to renewable energy is not just about electricity. It is about improving lives. Some key benefits include:

Better Health – Clean energy reduces indoor air pollution from kerosene lamps or open fires.

More Income – It powers small businesses and reduces the cost of energy.

Improved Education – Children can study at night under solar lights.

Environmental Protection – Clean energy reduces carbon emissions and protects forests.

BARRIERS TO ACCESS

While the benefits are clear, low-income families still face major challenges:

High Upfront Costs – Buying solar panels or batteries can be expensive.

Lack of Financing – Many cannot access loans, credit, or flexible payment plans.

Weak Policies – In some areas, laws do not support decentralized or off-grid systems.

Low Awareness – People may not know about clean energy options or how to use them.

> We are the first generation to feel the effect of climate change and the last generation who can do something about it.
>
> — ***Barack Obama***

SOLUTIONS THAT WORK

To overcome these barriers, several smart solutions are already helping people:

1. Pay-As-You-Go (PAYG) Systems

These systems allow families to pay for solar power in small amounts using mobile money. They remove the burden of big upfront payments. In East Africa, this model is already helping thousands.

2. Community Solar Projects

Some villages run their own solar mini-grids. These systems are owned and managed by the community, keeping costs low and benefits local.

3. Energy as a Service

Instead of buying equipment, people can subscribe to energy plans. This gives them access to power without the cost or worry of maintenance.

4. Government and NGO Support

Subsidies, training, and policy support from governments and organizations can reduce costs and improve access.

POLICY SUPPORT IS KEY

Governments must help make clean energy available for all. They can:

Remove taxes on solar equipment.

Support off-grid solutions.

Offer incentives to clean energy companies working in poor areas.

Fund training programs for local technicians.

When policy supports clean energy, businesses and communities grow together.

REAL IMPACT IN ACTION

In Bangladesh, solar home systems have reached millions of rural homes through microloans.

In Uganda, women entrepreneurs are earning incomes by selling solar products to villages.

These examples show that change is possible with the right support.

LOOKING FORWARD

Clean, affordable energy should not be a luxury. It is a basic need. For millions in low-income communities, renewable energy means light to study, power to work, and hope for a better future.

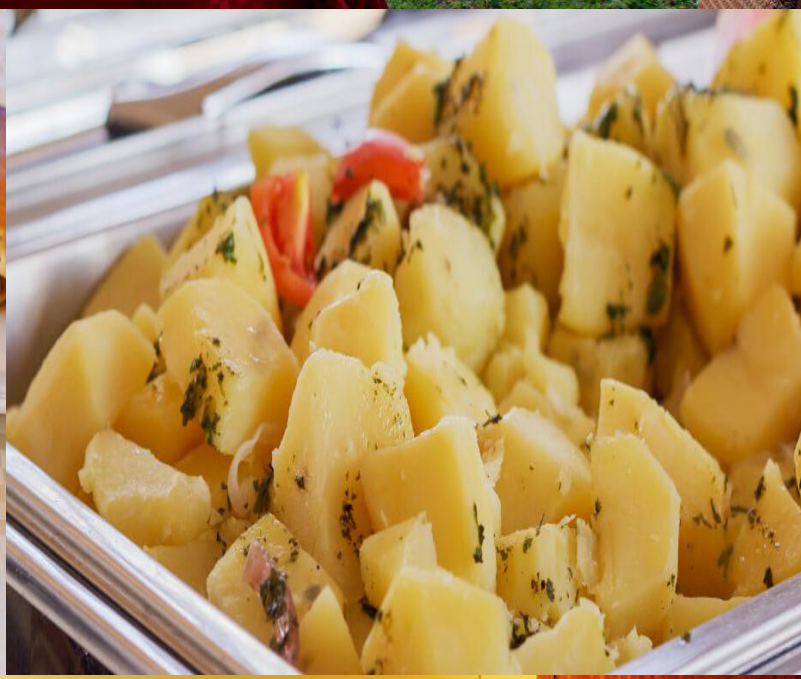
With the right mix of technology, finance, and policy, renewable energy can help build a cleaner, fairer world for everyone.

CONCLUSION

Renewable energy is more than just a climate solution—it is a tool for justice, health, and development. To make energy access fair, the world must focus on those most often left out. Every light switched on in a rural home, every child who can now study, and every family who saves money with solar is a step toward real progress.

Let's power the future—together.

Source of the Nile Hotel



Transforming Waste into Opportunity:

The Power of "Trash to Treasure"

In the heart of Uganda's **Namisindwa district**, a remarkable initiative is underway. Creation Care Foundation's "Trash to Treasure" project is revolutionizing the way communities think about waste, while empowering women and girls to become agents of change.

The project collects metallic soda and beer tops, and cut-out pieces of fabric, transforming them into stunning crafts like wall hangings and photo frames. This innovative approach not only reduces waste but also promotes sustainability and provides economic opportunities for vulnerable groups.

Namisindwa district has been severely impacted by climate change, with landslides, floods, and droughts affecting local communities. Women and girls, in particular, bear the brunt of these impacts, often being silenced and marginalized. However, through "Trash to Treasure," we're changing this narrative.

Our initiative has already benefited at least 20 women and girls, equipping them with skills and confidence. As they create beautiful crafts from discarded materials, they're not only generating income but also becoming beacons of hope in their communities.

The impact of "**Trash to Treasure**" extends beyond economic empowerment. It's also about promoting environmental conservation, challenging patriarchal norms, and amplifying the voices of women and girls. By providing a platform for them to share their stories and showcase their talents, we're helping to break down barriers and create a more inclusive society.

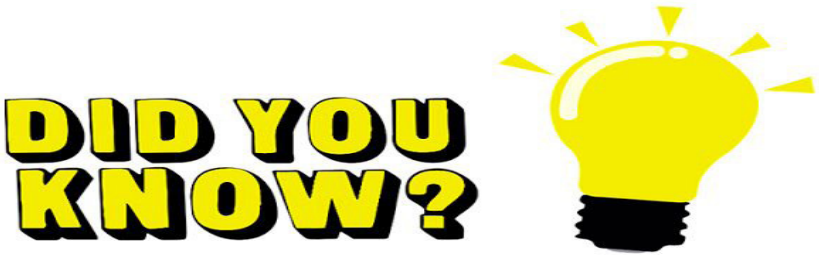
As we continue to work towards a more sustainable future, initiatives like "Trash to Treasure" serve as powerful reminders of the potential for innovation and creativity in addressing the climate crisis. By transforming waste into opportunity, we're not only reducing our environmental footprint but also empowering communities to thrive.

"Earth's care is our calling" and through initiatives like "Trash to Treasure" we're answering that call. Join us in our mission to empower women, empower the planet, and create a more just and sustainable world for all.

Linet Nabwire is the President of the Rotaract E-Club of Uganda Global RY2025/2026 and also the founder and team lead of Creation Care Foundation, a youth-led nonprofit organization dedicated to promoting sustainability, climate justice, and human rights in Uganda.

DID YOU KNOW? FUTURE ENERGY AND THE ENVIRONMENT

ENERGY FOR ALL



Did you know ?
lithium-ion batteries used in electric vehicles require up to 500,000 gallons of water to extract one ton of lithium? As EV demand rises, regions like South America's "lithium triangle" are experiencing water scarcity and ecosystem strain.

Did you know ?
One modern wind turbine can power over 1,500 homes — but manufacturing the turbine blades still relies heavily on petroleum-based composites? While clean in operation, wind energy still has a material footprint.

Did you know ?
Solar panels can lose efficiency when placed in areas with high air pollution? Dirty air blocks sunlight, reducing panel output and lifespan, especially in urban environments.

Did you know ?
Natural gas, often marketed as a 'cleaner' fossil fuel, still emits methane a greenhouse gas over 80 times more potent than CO_2 over 20 years? Leaking pipelines and extraction sites are major culprits.

Did you know ?
Geothermal energy taps into heat from beneath the Earth's surface and has one of the smallest land-use footprints per megawatt generated? It's clean, constant, and underused especially in regions sitting on tectonic fault lines.

Did you know ?
Tidal and wave energy could supply over 10% of global electricity but many systems are still in prototype due to high upfront costs and marine impact concerns? If scaled responsibly, oceans could become a major power source.

Did you know ?
Bioenergy made from crops or waste can reduce emissions, but large-scale farming for biofuels has led to deforestation and rising food prices? It's a classic sustainability trade-off: energy vs. land and food.

Did you know ?
Hydrogen fuel produces only water when used but over 95% of today's hydrogen is made using fossil fuels? Green hydrogen (made with renewable electricity) is the cleaner future, but it's still too costly for widespread use.

Did you know Energy efficiency is still the most overlooked "source" of clean energy? Improving insulation, appliances, and grid systems could cut global energy use by up to 30% without generating a single new watt.

THE INNOVATION ISSUE

GREEN TECH

Modern technology can help us protect the environment and live a more sustainable life. Recent technological innovations, like 5G networks and blockchain technology, can support global efforts to transition to cleaner energy sources. Similarly, AI-integrated remote sensors can help prevent environmental degradation and support climate science efforts.

01 First on our list of groundbreaking technological innovations is 5G, a technology that offers internet users high speeds and low latency. This powerful tech can support remote working conditions and take more cars off the road. Those who have access to the web via 5G can work from anywhere in the world and do not have to join the ever-increasing queues of carbon-emitting commuters.

02 (EVs) are without a doubt one of the most important technological innovations of our lifetime. While they do generate some amount of carbon during the manufacturing and charging process. However, as we increase our use of renewable energy, the carbon cost of running an EV will inevitably decrease. This means that EVs should be an integral part of our larger move away from fossil fuels.

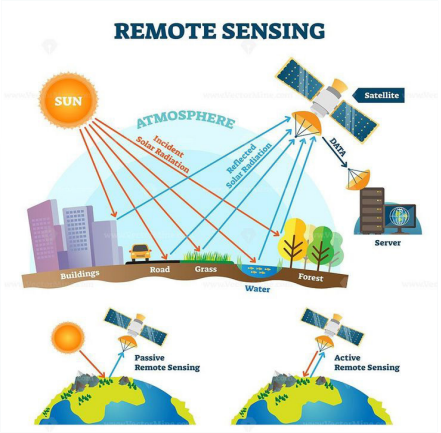
03 Construction companies around the globe are turning their attention to more sustainable materials. According to a poll, over47% of firms are planning to utilise some form of green construction in the coming years. These "green buildings" are expected to reduce CO2 use by 34% and can save 40% of all water use.

04 Digitisation has improved the operational efficiency of businesses around the world. Going paperfree is great for the environment, too. Increased digital adoption has led to a reduction in paper production.

05 The Internet of Things is revolutionising agriculture. Agricultural IoT technology ensures that farmers use the correct amount of fertiliser and pesticides. This can prevent unnecessary ecological damage and reduce waste caused by land mismanagement.

06 Rainwater harvesting technology can be installed in every home to produce clean, drinkable water from surface runoff. High-tech harvesting systems can turn rainwater into potable water. While this reactionary approach will not solve the climate crisis, it can still help us direct water to those in need.

07 Blockchain technology is a secure ledger that underwrites cryptocurrency and some carbon markets. This secure form of tracking ensures that carbon credits aren't counted twice and can help facilitate clean energy trading.



08 Remote sensing technology utilises drones and satellites in conjunction with cloud-based technology to weave together data from various sources. This gives policymakers a more informed view of environmental degradation and ensures climate protection.

URBAN FARMING

"A community where waste is transformed into valuable resources"

Amidst the urban sprawl of Jinja, Uganda, where green spaces are increasingly rare, a grassroots initiative is redefining the role of urban environments in sustainable agriculture. At the premises of Obutonde Environmental Association Uganda Limited, a modest office space has been transformed into a vibrant demonstration site for urban farming a testament to ingenuity, resilience, and environmental stewardship.

What began two months ago as a small-scale experiment has evolved into a compelling model for sustainable urban living. Utilizing repurposed materials such as decommissioned shoe shelves from a closed business our team created vertical gardens that now flourish with a variety of vegetables and herbs. These innovative structures are not only maximizing limited space but also underscoring the potential of resource-efficient urban agriculture.

The Initiative aims to prove a vital point: sustainable food production is achievable in urban settings, even with minimal resources. In regions grappling with food insecurity and unemployment, such efforts provide practical solutions that foster self-reliance and community empowerment. Our garden now serves as both a food source and a skills development hub, particularly for youth and women seeking alternative livelihoods.

Isaac Beju- Head Agronomist

Building on this momentum, we are preparing to introduce plant ponds constructed from recycled plastic bottles. This next phase will further demonstrate circular economy practices while expanding our food production capabilities and addressing urban plastic waste.

This initiative is more than a garden it is an educational platform and a catalyst for behavioral change. Through workshops, digital storytelling, and active community outreach, we are inspiring individuals and organizations to initiate their own green transformations. The project aligns with several Sustainable Development Goals, including Zero Hunger, Sustainable Cities and Communities, and Climate Action.

At Obutonde, urban farming is not merely a practice it is a movement. Our front-yard farm exemplifies how small, localized actions can yield meaningful environmental and social impact. We hope our story encourages urban residents, educational institutions, NGOs, and businesses to reimagine the potential of their spaces. Because cultivating sustainability starts with cultivating the will to act.

Styles of Urban Farming: Adapting Green Solutions to City Life

Urban farming takes many forms, each tailored to the unique challenges and opportunities of city living. Among the most space-efficient methods are vertical and container farming. These involve growing crops in stacked layers or using recycled containers like buckets, plastic bottles, or barrels. Ideal for balconies, rooftops, and indoor areas, they make farming accessible even in the most compact urban settings.

Rooftop and backyard gardening offer more traditional approaches, using available home or building space to grow food. Rooftop gardens improve insulation and reduce heat, while backyard gardens support household nutrition and reconnect families with nature. Both styles enhance food security and contribute to healthier urban ecosystems.

At a community level, institutional and collective urban farms transform vacant lots or public land into productive spaces. Managed by local groups, schools, or NGOs, they serve as hubs for education , food access,and environmental action. These collaborative farms demonstrate the broader potential of urban agriculture to build stronger, greener cities

hydro ponic gardening

glass gardening

aquaponic gardening

aeroponic gardening

URBAN

FARMING KARAMOJA

PROJECT AND PHOTOS BY ISAAC BEJU

WORLD ENVIRONMENT DAY 2025

PICTURES

CHERISH YOUR
ENVIRONMENT

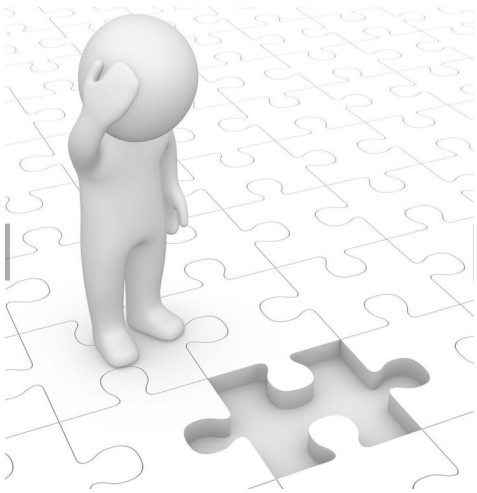
AFRICA
SUSTAINABILITY
WEEK
Securing a Future with More Cheers!

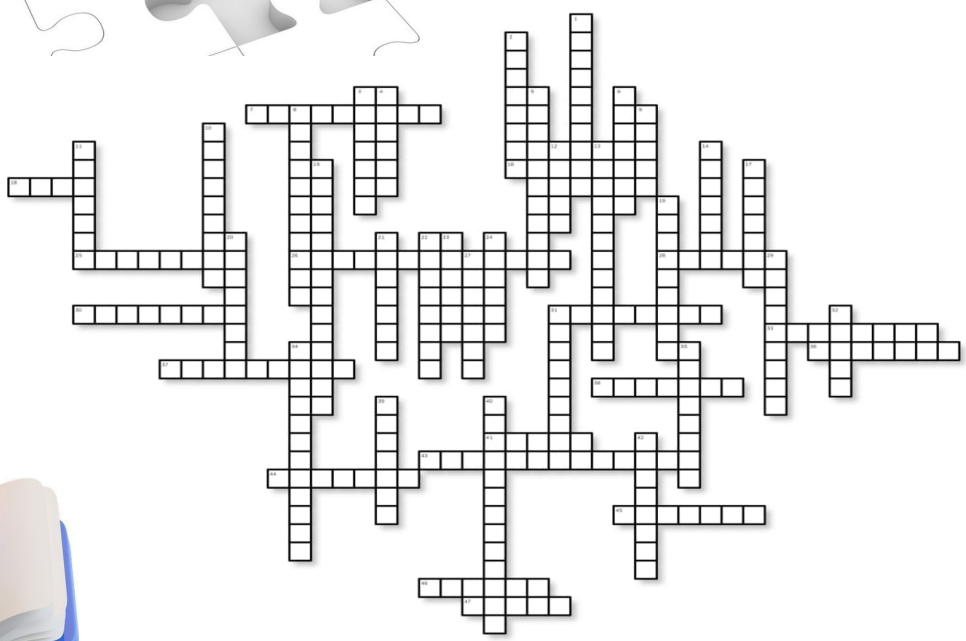
AFRICA
SUSTAINABILITY
WEEK
Securing a Future with More Cheers!

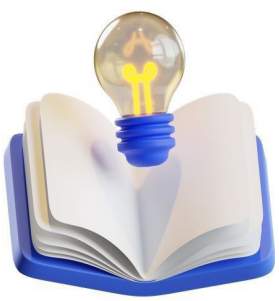
crosspherical puzzle

Across
7. Naturally rot
16. Soil loss
18. Dirty air
25. Daily traveler
26. Breaks down
28. Trash on ground
30. Harmful species
31. Air discharge
33. Swamp land
36. Fertile decay
37. Water storage
38. Animal home
41. Animal life
43. Tree replant
44. Not man-made
45. Ice mass
46. Of the sea
47. Sun power

Down
1. Sun trap
2. Toxic gas
3. Better reuse
4. Ancient remains
5. Earth-safe
6. Melt frozen stuff
8. Can turn to compost
9. UV shield
10. Nature system
11. Natural grow
12. Sea reef animal
13. Life variety
14. Plant again
15. Use balance
17. Underground water
19. Dirty air
20. Keep safe
21. Reuse waste
22. Supply with water
23. Life element
24. Top forest layer
27. Long dry spell
29. Endless source
31. Gas output
32. Plant life
34. Nature care
35. Feeds life
39. Weather trend
40. Tree clearing
42. Wild animals







The Ultimate Eco Dilemma Poll: Are You Green Enough to Decide?

Ten tough questions. No easy answers.
Just you, your conscience, and the planet.

1. Your city will only fund one green initiative. Which do you choose?

A)Ban single-use plastics
B)Subsidize electric vehicles
C)Turn landfills into urban farms
D)Solar panels on all roofs
E) Mandate recycled industrial materials

2. Your country must cut energy use by 30% in five years. Which policy do you support?
A) Daily household energy caps
B) High energy taxes on large homes
C) Ban fossil heating systems
D) Mandatory nighttime blackouts
E) Industrial power rationing

3. You must promote one material in the circular economy. Which?
A) Glass
B) Aluminum
C) Ceramics
D) Paper
E) Bioplastics

4. You're required to adopt one eco-discipline for life. Pick your burden.
A) Wash & reuse all containers
B) No dryer—line-dry only
C) No personal car
D) Grow your own vegetables
E) Buy only local goods

5. You get to enforce one global environmental law. Which?
A) Carbon caps
B) Ocean plastic cleanup
C) Deforestation bans
D) Biodiversity protection
E) Rare earth mining limits

6. A factory near your town can either make:
A) 100% recycled glass tiles (high energy use)
B) Biodegradable plates (single-use but low energy)
C) Durable ceramic products (harder to recycle)
D) Aluminum cans (recyclable but high mining impact)
E) Wood-based goods (renewable, but uses trees)

7. Your country has a chance to eliminate one of these permanently. Which would you choose?
A)Landfills
B)Ocean oil drilling
C)Fast fashion
D)Synthetic fertilizers
E)Air travel subsidies

8. A disaster hits your region. Which eco resource do you prioritize first?
A) Clean drinking water
B) Access to local food
C) Waste disposal and sanitation
D) Renewable energy restoration
E) Seed & soil preservation

9. Which type of environmental leadership do you trust most?
A) Scientists and data
B) Indigenous ecological wisdom
C) Activist movements
D) Policy-makers & green laws
E) Engineers and innovators

suggested answers on page: 39

10. After reading this magazine, what would you most likely do with it?

A) Recycle it properly
B) Pass it on to someone else
C) Cut out and use pages for crafts, collages, or teaching
D) Keep it as a reference or inspiration
E) Compost it (ifprinted on eco-friendly paper)

PARTNERSHIPS & ACTIVITIES

PICTURES

Award winning ceremony with rotaract e-club

Speech from President Immaculate of Rotaract E-club of ug.

Tree planting with the Chief environmental officer / 2024.

PICS with Mr George Ssekanza of Nile Breweries.

Tree planting activities- with Nile Breweries Group 2024.

Tree planting at Butiiti Kyenjojo 2024.

Planting smiles

Engaging with students of butiiti primary school in tree plantng activities.

The rotary corps inititiative butiiti 2025.

Scholarstic material for students at elevare childrens center

Addressing students on sustainabilty and waste disposal. 2024

Trainning community member on waste segregation activities

Bsf naturing in partnership with bioconvision a bsf naturing initiative

Community waste collection activities by julihos in partnership with obutonde

Rotaract

E-Club of Uganda Global

Rotaract
E-Club of Uganda Global

04th Charter CELEBRATIONS appreciation

ROTARY CLUBS

1. Kampala Munyonyo
2. Nsangi
3. E-club of Uganda Global
4. Saturday E-jazz
5. Provisional Rotary club of environment and climate action

ROTARACT CLUBS

1. Ndejje city
2. Namasuba
3. Metropolitan University
4. Kawempe
5. Entebbe Airport
6. Bwerenga
7. Garuga
8. UICT
9. Makindye
10. Kyanja
11. Kampala Kibuli
12. E-KANOS in formation
13. Bukasa
14. Gayaza
15. Cape Munyonyo
16. Clarke International University
17. Kaihura
18. Nsambya Hospital Training School
19. Makindye West
20. Kyengera Town
21. Lubowa
22. Kyengera
23. Kampala Mahaba
24. Njeru
25. Kajjansi
26. Sunrise Kampala in formation
27. Upper Kololo
28. Kampala the core
29. Kasangati

Appreciation to:

1. Rac Namasuba
2. Mc Mess Matia
3. Front Page Hotel
4. Lexie Images Photography
5. Brizzy Media
6. Envision Graphics

Special Recognitions

1. PAG Peter Kagwa
2. Rtn Kigoye Yusufu; Country Membership Chair Uganda D9214
3. RC E-club of Uganda Global
4. POP Bugembe Steven
5. ADRR Oketcho Emmanuel
6. CP Mark Asiimwe; E-clubs coordinator D9213
7. IPPOP Higenyi Noah Nobel
8. All Magical and Irresistible Presidents
9. All President Elects
10. Past Presidents
11. D9214

Rotaract E-Club of Uganda Global

Rotary
E-Club of Uganda Global

OBUTONDE

Twins Media

ABOUT US

WHO WE ARE

Our youth-led project, aptly named “obutonde” was born out of a shared commitment to address one of the most pressing issues of our time: the global waste crisis. With the environment under siege, landfills overflowing, and pollution spreading like wildfire, the need for innovative solutions and dedicated action has never been more apparent.

Obutonde is not just an organization; it is a movement driven by the energy, creativity, and determination of its youthful members. Our mission is simple yet profound: to catalyze positive change by promoting waste recycling, reducing waste generation, and fostering environmental stewardship

With each initiative, from reforestation to sustainable practices, we strive to harmonize human ambition with the rhythms of nature.

OUR OBJECTIVES

SKILL DEVELOPMENT:
To enhance skills and boost the participation of youth
and women in production,ultimately leading to increased incomes.

PRESERVE BIODIVERSITY:
Safeguard diverse ecosystems and endangered species
for a healthier planet.

COMBAT CLIMATE CHANGE:
Reduce emissions, promote renewable energy, and
protect our environment from climate impact.

EMPOWER COMMUNITIES:
Educate and engage communities in sustainable living
and conservation efforts.

SUSTAIN RESOURCES:
Manage natural resources responsibly to support future generations
and local livelihoods.

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info@obutonde.com

obutonde.com

@ OBUTONDE

Our Priorities

Educate & Inspire.

Raise awareness about the global waste crisis and the significance of sustainable living. Educate your family, friends, and colleagues about responsible consumption, reducing single-use plastics, and making informed product choices.

Youth Empowerment & Policy Influence

We are dedicated to empowering youth to become leaders in environmental sustainability. Our plans include creating mentorship programs, scholarships, and platforms for young leaders to drive change

Afforestation

Planting trees intentionally, restores the environment by mitigating climate change, enhancing biodiversity, preventing soil erosion, and regulating the water cycle. It also brings economic opportunities and social benefits. In essence, afforestation is a comprehensive solution for sustainable development.

Sustainable Waste Management

Minimizing Waste to Landfills:

By adopting advanced recycling technologies and waste-to-energy processes, obutonde significantly reduces the amount of waste sent to landfills and incinerators. This aligns with the circular economy principle of extending the life of products and materials by recovering their value before disposal.

MISSION

To Catalyze positive change by promoting Waste recycling

reducing waste generation and fostering environmental stewardship.

VISION

"A thriving community where waste is transformed into valuable resources, reducing our environmental footprint, and creating a healthier, more sustainable future for generations to come."

OBUTONDE

Obutonde Environmental Association Uganda Limited (OEAUL) is a nonprofit environmental advocacy organization based in Uganda.

OEAUL is a youth-led organization born out of a shared commitment to address environmental conservation challenges through a range of impactful initiatives like afforestation, sustainable waste management, youth empowerment and policy influence, and sensitization of children and communities about responsible environmental practices.

Through creating innovative solutions and dedicated action, we are promoting and providing more sustainable approaches to environmental conservation in Jinja district and surrounding areas. We have created strategic partnerships with Jinja city council and other participating organisations in the area. OEAUL currently has a subsidiary called Julihos Limited which is contracted by Jinja City council to handle waste collection and disposal in Jinja City.

Our conservation activities also include provision of technical guidance and support to

farmers and farming communities.

For more information, please access our website through the link https://obutonde.com/